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Editorial Comment

The Family Doctor

Too often we hear of the blame for late diagnosis of tuberculosis being placed on the Family Doctor. This is a smoke screen to hide the true state of affairs. Actually, late diagnosis must be laid at the door of those who waste the Tuberculosis Charity Dollar.

It is time for the Family Doctor to look into this and get information with which to defend himself. Otherwise, these charges will be used as whips with which to herd him into political medicine. Every doctor should get all local financial reports of public and private organizations which are handling tuberculosis funds. The doctor should study these reports carefully. If they are too abstruse for him to understand, he should call upon the Tuberculosis Committee of his County Medical Society to elucidate. If the Tuberculosis Committee is unable to do so, then that Committee should look for more easily interpreted financial information.

The Family Doctor has a right to expect and demand that the Charity Dollar be spent to find, for the sake of humanity, the tuberculosis victim while curable, and that that patient be sent to him for cure. It is admitted by all honest experts that survey of apparently healthy people is the only way to eradicate tuberculosis. The doctor cannot do that

work without the Charity Dollar.

Every doctor is hereby called upon to support to the very limit of his ability, the donation of every possible Tuberculosis Dollar, Public and Private, and then WATCH THAT DOLLAR until it is spent properly for case finding. Only then will the Family Doctor cease to be the "goat" for those upon whom the responsibility for Early Diagnosis of Tuberculosis truly rests, those who have the Public and Private Tuberculosis Charity Dollar entrusted to them.

The Family Doctor knows that Tuberculosis will never be talked away. It is time for him to answer his critics, for whom he has so long been the alibi.

F. W. B.

Blitzkrieg of the Bacilli

The world is witnessing today the armed forces of mighty nations rolling over the earth in a maddening rush of violence, death and destruction. Let it be hoped that soon the wisdom of Minerva and the merciful kindness of the Archangel shall prevail and that peace once more shall gently descend upon the now depraved temple of mankind.

It is to be expected, as has been seen in the past, that in the wake of the cessation of this devastating conflict, famine, poverty and disease will march. In this unholy parade,

another "5th Column," will be on the march—boring from within, undermining and sapping vitality, as it insidiously but relentlessly pursues its course of decay and destruction. The battalions of this column are composed of countless billions of small red rods—the tubercle bacilli.

Another Blitzkrieg will be needed—not one of military might, but a Blitzkrieg to rout the traditional enemy, tuberculosis. Let us continue to add to our already vast armaments of knowledge, study and research and replace the bombers, tanks and machine guns by these benevolent forces of humanitarianism. Let the banner of the double-barred cross of Lorraine, rather than the battle flag of the stars and stripes, the union jack, or the swastika, fly high above our bastions. May the next battle front be the marble halls of learning and the laboratories of scientific research, instead of the blood stained mud of Flanders' field. Yes! Another war—but a war against the ravages of disease and for the blessedness of health.

C. H. H.

Committee on Military Affairs

Roosevelt:

Whereas: The trend of present events would seem to call for the immediate action on the part of the government of the United States to protect its interests.

Whereas: The President of the United States has stressed the great necessity for immediate and complete aid for all democracies.

Be it Resolved: That we, the Fellows of the American College of Chest Physicians, meeting in annual session in New York City are in whole-hearted accord with the sending of such immediate aid and that in the event of need, we, the Fellows of the American College of Chest Physicians, do offer our services to the government of the United States of America.

John H. Peck, M.D., President.

In accordance with this, there has been established a Committee on Military Affairs, which is assembling data on all chest specialists for the information of the Surgeon General of the Army and the Surgeon General

of the Navy, to be used in the event of a general mobilization. Questionnaires have already been forwarded to large numbers of chest physicians and the data is being correlated.

The Committee is headed by Dr. C. M. Hendricks, El Paso, Texas; and his aides are Dr. Hugh A. Kinghorn, Saranac Lake, New York; Dr. Ralph Matson, Portland, Oregon; Dr. Edgar Mayer, New York City; Dr. J. Winthrop Peabody, Washington, D. C.; Dr. Joseph Post, Philadelphia, Pennsylvania; and Dr. Walter E. Vest, Huntington, West Virginia.

The College is anxious to serve in the essential work of preparedness for defense now being conducted throughout the nation and asks for the Committee on Military Affairs the prompt cooperation of every physician doing chest work.

F. W. B.

D-5 In The A. M. A. Directory

Those Fellows of the American College of Chest Physicians, who reside in the United States or its territories have D-5 placed after their names in the new 1940 Medical Directory published by the American Medical Association, designating their membership in the College.

Much of the phenomenal success of the organized efforts of the College is due to the fact that it worked through the organized County and State Medical Societies and the American Medical Association, and also to the excellence of those organizations. This has all been in accordance with the Pennsylvania Plan, as published in the Journal of the American Medical Association, November 12, 1938.

F. W. B.

Congratulations We wish to extend our congratulations to yet another step forward in the Tuberculosis Crusade, the construction and staffing of the Triboro Hospital, the City of New York's new tuberculosis unit. Construction will be completed within the next month and treatment will begin on January 1, 1941.

Dr. Goldwater, Commissioner of the City's Department of Hospitals, announces that the following Senior Staff Members have been appointed: as *Directors of Medicine*, Drs. Richard Bennett and H. McCloud Riggins; as

(Continued to page 254)

Address of the Outgoing President

RALPH C. MATSON, M.D., F.A.C.P., F.A.C.S.
Portland, Oregon



A distinguished friend of mine and member of a well known medical society once said to me, in discussing presidential addresses, that their chief purpose, if not their only one, was to occupy time, while the room was being filled. Even so, the custom of this College imposes upon its President the not unpleasant duty of opening this morning's session with a few more or less pertinent remarks. Therefore, in following this precedent I am yielding to tradition rather than to an overwhelming desire to further fill-up an already well filled program.

Before turning to such comments as I may have to make, it would be indeed ungrateful of me did I not pause to express to the Fellows of the College the deep gratitude which I feel for the honor conferred upon me in entrusting to me the conduct of our College during the past year. Aside from the honor, it has given me a close association

with many of the Fellows, which has been most enjoyable. My sincere thanks are due the chairmen and every member of the numerous committees which have functioned splendidly during the past year. They have unselfishly labored for the good of the College.

To Dr. George Ornstein, General Chairman of the New York Scientific Program Committee, to Dr. Foster Murray, Chairman of the Medical Section, to Dr. David Ulmar, Chairman of the Surgical Section, to Dr. Edward P. Eglee, Chairman of the Clinical Section, to Dr. James S. Edlin, Chairman of the Entertainment Committee and to Dr. Edgar Mayer, Chairman of the General Arrangements Committee, we all are grateful for the comprehensive program and arrangements they have made.

For my successor in office I can do no better than bespeak the same wise and wholehearted cooperation that has been accorded me by the Board of Regents, the Governors and the members of the various committees; and I especially wish to thank our Executive Secretary, Mr. Murray Kornfeld for the invaluable help he has given me.

Presidential addresses, it has always seemed to me, fall into a No-Man's-Land of literary effort. Their reason, obviously, is to review the activities of the College, outline policies, suggest ways and means for its betterment, and for the increase of its usefulness. We have an interesting program and a long one, and in order to finish we must be economical of time. I shall not detain you long.

I cannot pass on to other matters without some reference to the often repeated statement that there are too many tuberculosis organizations and that there should be an amalgamation of all into one. Perhaps there may be too many organizations, but I dare say there are not too many good ones. Some of these organizations have been cluttered up with impure fermentations and insidious maneuvers. The College has had to face the hard and inescapable reality that efforts were being made to disrupt and disorganize us. But I am happy to say that our foundation is more solid than ever; we are stronger and more active and our achievements should

convince the most skeptical that our existence is justified and that we are here to stay. With no spirit of competition with any organization, but more than ever a desire for wholehearted cooperation, the College will continue on its way.

There was some unfortunate friction between the National Tuberculosis Association and the College. I am most happy to report to you that the points which appeared to have caused misunderstanding and which were creating annoyance on both sides have been clarified and a most amicable understanding now exists. The Board of Directors on February 9th, and the Executive Committee on February 10th, of the National Tuberculosis Association, adopted a resolution without a dissenting vote, that the National Tuberculosis Association was not opposed to the College. This resolution is an answer to those who would have us believe that the National Tuberculosis Association did not approve of our organization.

I am sure that our reason for not desiring to amalgamate with the Trudeau Society is understood by all; namely, we cannot accept lay members. Moreover, it is fitting that the Trudeau Society meet with its parent organization, the National Tuberculosis Association at the same time and place. The College, on the other hand, has a special mission regarding the general medical profession and can accomplish more good by meeting at the same time and place with the American Medical Association, and with state and county medical societies, rather than similar tuberculosis organizations.

We feel that the College has accomplished much this year by being given the Wednesday afternoon session of the American Medical Association's general scientific program to conduct a symposium on tuberculosis. This was accomplished by the Scientific Program Committee, through the efforts of Dr. Champ Holmes, and we congratulate him and his committee upon this splendid achievement.

The College has forged ahead in a manner of which I am tremendously proud; my pride could be identified as paternal, being its fifth foster father.

The College today is the largest organization of chest specialists meeting within the circles of organized medicine. Our membership now totals over six hundred Fellows,

one hundred and six of whom have been admitted during the past year. During the past two years, the College has set up Governors in 44 states and the District of Columbia; Regents have been added, comprising 14 regional districts in the United States. In addition to the two Governors appointed last year for Hawaii and the Philippines, we have affixed to our list other United States Possessions such as Alaska, Puerto Rico and the Panama Canal Zone. As a matter of fact, the College is becoming international in character because added to Mexico, which was represented last year, we have during the past year extended our activities to Australia, South Africa, India, Egypt, China, Norway, Cuba, Ecuador and Canada.

All Fellows who have been admitted during the past two years have been endorsed by the Governor of their State and the Regent of the district wherein they reside. A minimum requirement of five years' training for Fellowship has been established, and all Fellows accepted have submitted evidence that they are in good standing in their county and state medical societies and the American Medical Association. It is our intention to elevate the standards for membership, and, as far as we know, the College has set the highest standards for membership of any of the organizations existing today in the specialty of chest diseases. It is the hope and intention of the Board of Regents of the College that the norm be set higher from year to year—so that each member may be ever more proud of his Fellowship in the College.

I am sure I express the confidence and appreciation of the College for the manner in which the Board of Regents has conducted the College affairs. Dr. Frank Burge, Chairman of the Board of Regents, deserves our highest praise and esteem for the manner in which he has directed his office.

In the field of education, more than half a million copies of DISEASES OF THE CHEST have been circulated during the past six years among physicians in the general practice of medicine. We are grateful to the Editorial Board, and in particular to the Editor-in-Chief, Dr. Burge, for the excellent work and the great amount of energy expended in writing and in directing the Editorial Department of the Journal. I know of very few

journals which have enjoyed such a wide circulation and popularity as has DISEASES OF THE CHEST. The Journal, in the main, has been made possible because of the notable support given by private sanatoria throughout the country, and we trust that these institutions will continue to support the Journal in the future as they have in the past. We are grateful to them as well as to the other advertisers for their assistance in making the Journal possible.

A number of tuberculosis programs sponsored by the College have been presented throughout the country before state and county medical societies as a result of the work of the Tuberculosis Organization Committee under the Chairmanship of Dr. Benjamin Goldberg, which is in keeping with the Pennsylvania Plan, as adopted by the College. This Committee has done an exceptionally fine piece of work as you shall see by their report.

The Committee on Undergraduate Teaching in Medical Schools has been very active in contacting the deans of the medical schools and in making a survey of the present teaching of tuberculosis and other chest diseases to the under-graduate. A curriculum for the adequate teaching of such subjects is being presented to the deans of medical schools by the committee just mentioned. Dr. Edward W. Hayes has been Chairman of this committee since its inception and has given unselfishly of his time and energy toward a fruition of this important work. I have studied the report of this committee, which was recently sent to me by Dr. Hayes, and, as Chairman of the Tuberculosis Curriculum Committee of the University of Oregon Medical School, I will say that the recommendations of Dr. Hayes' committee will be followed in the teaching of tuberculosis at Oregon, beginning next Fall.

In the field of economics, the College has been the only organization which has interested itself in the physician in the private practice of medicine and in the private sanatoria. Realizing that all government and state propositions and proposals have been made for the benefit and enlargement of state, county and federal hospitals for the care of tuberculosis to the exclusion entirely of the private hospitals, the efforts of the Sanatorium Committee, of which Dr. Harry Warren

is Chairman, have been directed toward alleviating the situation of the forgotten private hospital. Also through this committee, plans have been perfected toward interesting large industrial corporations in insuring their employees against tuberculosis. Heretofore, tuberculosis has been omitted from all insurance policies, and it is to be hoped that through this plan the means of paying for the care of the tuberculous will be made available to a greater proportion of our employed. In all of these plans the free choice of physician is maintained and the self-respect of the worker is also upheld.

The College has been active in advocating, as part of the Pennsylvania Plan, the establishment of better conditions, adequate pay, and the separation of the medical department of hospitals from political control for its men actively employed in institutions. This aspect of our program should be of particular interest to Fellows of the College who are affiliated with public institutions, and, as far as I know, the College is the only organization which has set forth these principles as part of their established program. Our tuberculosis committees within organized medicine will be an important factor in helping to bring about needed adjustment with regard to the above proposals.

The Committee on Statistics under the able Chairmanship of Dr. Peabody has done a splendid job and we wish at this time to pay tribute to both his committee and to him.

The College membership has now increased to such an extent that I should like to see each regent arrange sectional scientific meetings in his area. At these meetings, lectures and clinics should be held, constituting perhaps a two-day, or possibly a three-day chest symposium, to which the general medical profession would be invited. Not only would these meetings, which could be conducted at specified times and intervals, provide sustained contact with members, but by conducting such a teaching program, the last objection to the classification of "College" for our organization would be removed. Such sectional meetings would raise the standards of medical practice, as far as chest diseases are concerned, and give added prestige to the College.

I have one more suggestion to make, namely, that a committee should be appointed to

(Continued to page 254)

Diagnosis and Treatment of Bronchial Asthma

CHARLES H. EYERMANN, M.D.*

St. Louis, Missouri

The concept of allergy has increased our knowledge of etiologic agents and, as an integral part in the evolution of medical diagnosis, has contributed an important phase in the clinical differentiation of those who wheeze. As a result, the wheezing dyspnea of bronchial asthma, of certain types of cardiac decompensation (cardiac asthma); of bronchial stenosis from tumours, from aspiration of foreign bodies, or from inflammation (in localized lesions, the wheezing may be diffusely distributed over the chest cage); of mediastinal tumours (hilum glands, vascular lesions, neoplasms, enlarged thymus); and of pulmonary disease (emphysema, fibrosis), is now more easily differentiated on the basis of clinical history and physical examination, when complemented by the aid from the clinical, roentgen, physiochemical or histopathologic laboratory. Specifically, the concept of allergy has not only distinguished bronchial asthma from other afflictions in which wheezing dyspnea is the presenting symptom, but has also differentiated it from the clinical situations which appear to be exactly similar.

Bronchial asthma can be defined as an affliction marked by recurring paroxysms of wheezing dyspnea, more pronounced in the expiratory phase, cough, and a sense of constriction in the chest, due to pathology of the bronchioles. With this definition as a basis, from the standpoint of etiology, it is convenient to divide bronchial asthma into two broad classes: (1) allergic, in which specific sensitization can be proved and (2) non-allergic, in which no specific factor can be discovered despite clinical resemblance to the allergic group.

The following criteria¹ aid in establishing the diagnosis of allergic asthma:

(1) In over one-half of those with asthma, there are allergic manifestations in the antecedents. However, specific hypersensitivity may not be transmitted and the asthmatic patient may have antecedents with eczema,

with migraine, or with vasomotor rhinitis, as well as with bronchial asthma.

(2) During a life time, the allergic individual usually has more than one allergic manifestation. Combinations of asthma and hay fever, asthma and eczema, asthma and non-seasonal vasomotor rhinitis are frequent, occurring more often sequentially, but occasionally concurrently.

(3) It usually starts in early life—the onset past the age of fifty is infrequent.

(4) It is, in the beginning, chiefly paroxysmal in nature. Between attacks, for indefinite periods, the patient is practically normal, presenting neither subjective nor objective symptoms or signs. As the condition progresses, attacks follow more rapidly, and complicating bronchitis and emphysema eliminate all free intervals.

(5) Acute paroxysms are often preceded by symptoms of hypersensitiveness involving other systems, such as hay fever, vasomotor rhinitis, gastro-intestinal disturbances, urticaria, and angioneurotic edema.

(6) The most severe attacks occur while trying to sleep.

(7) A tendency to periodicity in relation to the hour of the day or night, day of week, or season of the year.

(8) Orthopnea is a prominent feature, even between paroxysms.

(9) At first, pulmonary emphysema is present only during the acute episodes; later it becomes a permanent feature in the physical examination.

(10) Epinephrine will control the dyspnea in all except the most unusual instance.

(11) Sputum collected during or shortly after an attack may show Curschmann's spirals, Charcot-Leyden crystals and almost invariably eosinophils. The coincident blood and sputum eosinophilia is almost pathognomonic. And, persistent absence of eosinophils in the sputum is a fairly certain indication that allergy is not the cause of the wheezing.

(12) The occurrence of positive cutaneous reactions—such reactions help identify the allergic individual, but do not make the etio-

* Instructor in Clinical Medicine, Washington University School of Medicine, St. Louis, Mo.

logic diagnosis in all instances. Skin tests may err in two directions—sometimes they are positive to substances impossible to correlate with the clinical picture and sometimes there are no cutaneous reactions when the patient undoubtedly has symptoms from a particular allergen. Positive reactions to inhalants are most likely to be clinically significant.

(13) And finally, the patient with allergic asthma is one who is chronically ill, seldom dying from his affliction—a highly morbidity with a low mortality. When death occurs in the allergic group, it is more often accidental, while the non-allergic group appears to have a definitely inherent mortality².

These criteria will aid in differentiating not only allergic from non-allergic bronchial asthma, but also in determining the presence of an allergic component in all other types of wheezing dyspnea.

The treatment of both types of bronchial asthma resolves itself into the subjective relief of the paroxysmal wheezing dyspnea and the removal of, or modification of its cause. The plan of treatment depends upon the phase of the disease at the time of observation, the etiologic agent and upon what type of a patient has the disease.

The successful management of the acute paroxysm of bronchial asthma can be undertaken without knowledge of its etiology and is dependant upon the subcutaneous injection of epinephrine hydrochloride 1:1,000, probably better known as adrenalin. Except in those who have developed a tolerance for it, doses up to 0.3 cc. are as effective as the larger doses, and without the unpleasant and sometimes alarming side actions of the latter. A satisfactory method of using the drug is to fill the syringe with 0.5 cc., more or less, and, with the syringe remaining in place, to inject one minim or 0.1 cc. a minute until the attack begins to subside or until beginning physiologic effect is noted by pallor, which is often first seen about the nose by tangential light, by fibrillary muscle tremor, or by palpitation. When physiologic effect is obtained, there is no need to administer more epinephrine even if there has been no improvement in the attack. In an emergency, however, one need not be concerned with overdosing, and enough should be given to produce the desired effect. In instances of extremely severe bronchospasm, it is possible

to give, by slow continuous subcutaneous administration, several cubic centimeters of epinephrine without inducing side effects.

When frequent subcutaneous doses of epinephrine are required, the frequency of such dosage often can be reduced by the subcutaneous injection of 0.5 to 2.0 mgm. of powdered epinephrine in oil³, thus producing slow absorption and thereby prolonging the effect of the epinephrine.

Ephedrine⁴ and the oral administration of adrenalin⁵, 1:100 solution, by means of an all-glass nebulizer are useful only for mild attacks, attacks which are more a discomfort than a paroxysm of bronchospasm. The inhalation of benzedrine base⁶ and of neosynephrine⁷ also will relieve similar discomfort. When these are not at hand, hot strong black coffee sipped slowly, measures to induce belching, inhalation of the fumes of burning stramonium leaves, emetics, or enemata will also bring about relief. Continuous mild or moderate wheezing will also clear up with positive pressure breathing⁸, produced by pursing the lips during expiration, inspiration being conducted in the accustomed manner. Acetyl salicylic acid is used by many and is often helpful, but treacherous. The frequency with which it induces severe bronchospasm forbids its indiscriminate use and it should not be employed until one is certain beyond a peradventure that it will not induce of itself, or increase, an already existing bronchospasm. In these mild attacks, sedatives of the hypnotic series will be of help. They, too, should be used with discernment because they have been known to induce bronchospasm. More often they are combined with ephedrine to overcome its side effects and so there is a small measure of safety, if idiosyncrasy to them exists, as well as the advantage of their possible synergistic action.

The patient with frequently repeated paroxysms of bronchial asthma, however, becomes free of bronchospasm more rapidly in a hospital where the usual extrinsic causes (feathers, orris root, wool, cottonseed, insecticides, animal pets, house dust) can be avoided, the nutritional status more readily maintained and diagnostic measures employed without effort to the patient. Rapid improvement under such circumstances is presumptive evidence that the causative factor is an inhalant present in the home or business

environment. Rarely, rapid improvement in a relatively allergen-free environment may be due to the unwitting avoidance of an ingestant because of the possible differences between the usual and the hospital diet, in the preparation, flavoring, or type of food. If improvement does not occur after five days in an allergen-free environment, trial diet should be instituted as an additional measure.

As trial diets, if the nutrition is adequate, one may use Melba toast and tea without milk or cream; if there is undernutrition a trial diet may be made up, prohibiting the foods that are the most frequent causative agents statistically, and those suspected by the patient. A diet without milk and milk products, wheat and foods made with wheat, egg and foods containing egg, raw or uncooked foods, chocolate, nuts, fish, spices and condiments, or those trial diets suggested by Rowe⁹ or by Vaughan¹⁰ will serve the purpose. There is always the possibility, however, that the patient may be hypersensitive to one of the foods in these dietaries. With any of these trial diets improvement should begin between the third and the fifth day. The role of other foods in the production of bronchospasm is then determined by adding one new food at a time, and only one, each twenty-four hours. If the persistent or frequently occurring episodes of bronchospasm abate under this environmental and dietary control, one can assume that they are due to an inhalant and an ingestant. If moderate wheezing, cough, or expectoration persist it is probable that organic changes in the bronchial tree (chronic bronchitis and bronchiectasis the more common) or lung parenchyma (emphysema the more common) have resulted from the frequently repeated episodes of allergic bronchospasm.

Generally, the asthmatic paroxysm responds to these symptomatic measures. In a small percentage, the patient remains in a constant asthmatic state despite environmental change, dietary manipulation, and subcutaneous administration of epinephrine. Soon the effect of epinephrine is transitory, even with increasing dosage and shorter intervals of administration. Finally, even large doses fail to relieve, while at the same time they increase the nervous irritability and produce palpitation, tremor, weakness, and pallor. Now one has the clinical condition

which is called status asthmaticus or intractable asthma. The slightest exertion, eating, drinking, or cough increases the already existing discomfort. Anoxemia, exhaustion, fear, and overdosage with epinephrine are the factors which aggravate the condition.

On physical examination, there is pulmonary dilatation as shown by great hyperresonance and absence of downward expansion at the bases, with diffusely distributed inspiratory and expiratory wheezing upon easy breathing. When the patient has had a great deal of epinephrine there is also tachycardia, occasionally with extrasystoles, cold, clammy extremities, anxious expression, a certain amount of hyperkineticism, and some degree of cyanosis of the lips and nail beds. Such patients are dehydrated and undernourished because their dyspnea does not allow a sufficient amount of drink or food; and usually that which is swallowed increases their discomfort so that the will to swallow is weakened. All of this goes to make up a clinical situation suggesting a fatal outcome.

The therapeutic indication for this situation is the absolute minimum of physical activity, control of the cough, correction of the anoxemia, and liquefaction of the sputum, and can be treated by one, by a sequence, or by a combination of several therapeutic plans. Irrespective of the plan employed, discontinuance or great reduction in dosage of epinephrine should be part of the treatment.

One of the best methods of interrupting the cycle of attacks in status asthmaticus is by means of the continuous inhalation of a mixture of 80 per cent helium and 20 per cent oxygen¹¹ through the especially designed mask of Boothby, Lovelace and Bulbulian¹². This method decreases the amount of effort required to breathe, but there is no immediate effect upon the bronchial spasm, edema, or secretions. It requires from 12 to 48 hours of uninterrupted inhalation to bring about improvement—the time required seemingly dependent upon the length of time the patient has been in status. As in all other types of therapy which interrupt the cycle of attacks, small doses of epinephrine again become effective during the ensuing improvement.

Aminophyllin¹³, in dosage of 4 to 8 grains in 10 cc. of glucose or normal saline, given very slowly intravenously by means of a 22 gauge needle, gives prompt relief in some

instances. When the relief is temporary it can be repeated. The manner in which it induces relief is not known.

Anaesthesia with ether and olive oil¹⁴ by rectum will break the cycle in status asthmaticus in about 50 per cent of cases. The average adult dose is 5 to 7 ounces of a mixture of equal parts of pure olive oil and surgical ether. It should be given without the usual preanaesthetic medication because of the frequent harmful effects of the ordinary dosage of morphine, and can be given, without preliminary cleansing, by gravity or by a syringe, a few cubic centimeters at a time until anaesthetized. The duration of the anaesthesia is usually several hours, and after one-half to one hour of anaesthesia, epinephrine in small doses again becomes effective. It should not be used as a matter of last resort and only in conjunction with supportive measures.

In lieu of these methods or as ancillary measures, drugs that will control cough or induce rest will help the patient survive until the status asthmaticus terminates. When cough is not a prominent part of the symptomatology, sedatives of the hypnotic series are helpful when given to physiologic effect. Chloral hydrate, chloretone, and the bromides are the safe drugs to use because they have not, in my experience nor in the reports, been shown to induce bronchospasm. Barbitol and its derivatives are valuable, but should not be given in full dosage until one is certain that hypersensitivity to them does not exist, because they frequently induce and thereby increase already existing bronchospasm. In those who have a short unproductive, frequently repeated cough, when all other methods fail, morphine is useful in SMALL DOSES provided no idiosyncrasy exists. The cough reflex is depressed by doses which are too small to exert hypnotic action so that one should use the smallest dose that will serve the purpose. It should not be employed more frequently than is necessary to maintain the required degree of control of coughing. The repetition of the single effective dose should not be at stated intervals, but according to the needs of the patient and, to avoid accumulative effect, the dose should be reduced as soon as there is alleviation of symptoms. IT SHOULD NEVER be given in a customary dose of 0.015 Gm. ($\frac{1}{4}$ grain) and never com-

bined WITH ATROPINE. THE EXACT INITIAL DOSE necessary for relief of cough cannot be stated because it varies with the individual and with the intensity of his symptoms, BUT LIES BETWEEN $\frac{1}{32}$ and $\frac{1}{12}$ OF A GRAIN OF MORPHINE FOR THE ADULT; if idiosyncrasy exists even this dosage is dangerous. If the cough is not allayed by several injections at three or four hour intervals, a small increment in dosage can be tried. During the period of morphine administration, the respiratory rate must not fall below 20 per minute. It is unusual to require $\frac{1}{4}$ grain (0.015 Gm.) morphine during twenty-four hours as a total dosage. In some, better results are obtained by combining the morphine with small doses of epinephrine.

As a rule, status asthmaticus terminates successfully when large amounts of sputum, usually purulent, are coughed up, so that adequate treatment of the dehydration serves the purpose of correcting deranged metabolic processes and liquefying the sputum, and should be instituted simultaneously with, and be a part of whatever therapeutic plan is being used. Fluids should be given parenterally and orally if possible, the amount, type, and method of administration being determined by the exigencies of the clinical situation. Co-existing abdominal distention should be relieved by a small catheter left in the rectum to allow of the easy expulsion of gas and by enemata as soon as the condition of the patient permits. Cyanosis, when present, should be corrected by oxygen inhalation.

Many variants¹⁵ of the therapeusis for this clinical phase of bronchial asthma are proposed by clinicians with comprehensive experience in the care of these cases. These will be found satisfactory for selected cases. They usually concern the type, dosage, and technical administration of their favorite sedatives, and the simultaneous management of the associated dehydration and the nutritional state. As yet no one method is applicable in all instances.

When the cause of the allergic bronchial asthma has been determined, all that is necessary to bring about a clinical cure is the absolute and complete avoidance of the offending substance. If an ingestant, it should not be eaten and, if an inhalant, it should not be inhaled. There is no drug which will alter

or prevent the effect of the absorbed allergen in the hypersensitive individual.

If the causative food is essential to the maintenance of nutrition, oral hyposensitization should be tried. Occasionally it is successful, at least it is more often so, than hypodermic injection. One begins by feeding minute amounts daily and increasing the amounts by small increments at intervals of five days until a satisfying amount is eaten. Recurrence of symptoms necessitates reduction of the dose to the one at which no symptoms were produced, followed by gradual approach with smaller increases in amount to the dosage which had previously induced the symptoms.

If the inhalant cannot be wholly avoided, one should attempt to raise the patient's tolerance to the causative allergen by hyposensitization injections so that the accidental absorption of small amounts of the allergen will not induce incapacitating symptoms. Specificity is the all important determinant for the success of these injections. No amount of house dust injections will help a patient sensitive to orris root and no amount of hyposensitization injections will prevent the symptoms from the absorption of immoderate amounts of the offending inhalant. In general, one follows the directions for the administration of pollen solutions for hay fever. When the strongest possible dose is attained, the interval of injection is lengthened so that finally one gives an injection one time in three or four weeks over a period of a year. Discontinuance of hyposensitization treatment does not allow the unrestricted exposure to the offending inhalant.

When the allergic asthma has induced pulmonary emphysema or there is an associated infection of the bronchi or paranasal sinuses, the diagnostic problem is confused by the occurrence of bronchospasm unassociated with demonstrable absorption of allergen and the therapeutic problem is complicated by the necessity of appropriate therapy for the associated conditions. Such therapy, whether medicinal, climatic, psychic, or mechanical, is only to alleviate the effects of specific hypersensitivity and will vary with the experience, ingenuity, and enthusiasm of the therapist.

When one knows the allergic cause of the acute paroxysm, it is easy to explain the

bizarre and extraordinary circumstances under which it occurs, and one becomes acutely aware that in bronchial asthma, the factor of coincidence will credit many diverse therapeutic measures, either of the past or contemplated, as cures, when in reality it was the unknowing avoidance of the causative agent which initiated the cure. As an example (which appears in many different forms in one's experience with allergic individuals), there is the business man of forty-six years of age, who sought relief for his non-seasonal asthma of several years' standing, which was a recurrence of non-seasonal asthma he had had from early childhood to the age of twenty years. He left the farm to live in the city and shortly thereafter had a nasal operation. His asthma disappeared. He was sensitive to horse dander, which undoubtedly accounted for his early asthma, as it did for his present asthma, because he had taken up horseback riding. The operation had been credited with the cure and not the unwitting avoidance of horse contact. It is interesting to speculate in those instances of our experience where the offending substance was deliberately avoided, as to what would have been credited with the cure had the same avoidance occurred unknowingly.

The therapeutic problem in those who appear to have non-allergic asthma is difficult. One is bewildered by the diverse stimuli that induce the bronchospasm and tormented by the thought that hypersensitivity exists despite negative cutaneous reactions, such being due either to our failure to test with the proper allergen or to immunologic vagaries. Successful therapy in these cases requires a thorough knowledge of internal medicine and its diagnostic handmaiden, allergy, with an expanding experience with asthmatic patients and their psychology. Practically, one decides as to the care of foci of infection, the use of vaccine, either stock or autogenous, the employment of non-specific desensitization with peptone, with milk, with typhoid or colon bacilli, with tuberculin, and such miscellaneous forms of therapy as autohemotherapy, exposure of the various portions of the body to the roentgen ray, physiotherapy, light therapy, hydrotherapy, climatotherapy, endobronchial treatment with bronchoscope, and breathing exercises—all of

which have enthusiastic proponents, but none of which improve all cases. The multiplicity of therapeutic plans for this type of bronchial asthma mirrors the difficulty in obtaining consistent satisfactory therapeutic results.

While one indicates methods of therapeutics and medicinal formulae, it should be realized that there is no standardized treatment—that one treats an individual influenced by the distress and the fears incident to a disease reputed to be incurable. The best therapeutic results are founded upon a study of the pa-

tient as a whole, considering his heredity, his environment, his peculiarities, and his reactions to discomfort; correcting the abnormalities found by physical and laboratory examinations; evaluating the influence of controlled environments; interpreting the observed reactions of cutaneous testing, the ingestion of foods, and the administration of drugs in the light of past experience and applying treatment guided by the integration of this knowledge.

634 North Grand Blvd.

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The Early Diagnosis of Pulmonary Tuberculosis

MANUEL QUISUMBING, M.D.*

San Pablo, Laguna, Philippine Islands

The early diagnosis of pulmonary tuberculosis is of paramount importance to the physician as well as to the patient. The patient with pulmonary lesion at its early stage, who seeks medical aid, has a better chance of recovery than the one with advanced pulmonary lesion. Also, the patient with incipient tuberculosis yields better to modern treatment and is usually cured; the one with advanced pulmonary lesion is not benefited at all.

Our several years' experience in phthisiotherapy has shown that, of the dispensary patients going to our tuberculosis clinics, only ten per cent have incipient pulmonary lesions; twenty per cent have moderate pulmonary lesions; and approximately seventy per cent have advanced pulmonary lesions.

This fact can be attributed to one main factor: **LACK OF EDUCATION.**

The public, in general, lacks the rudimentary knowledge about the disease of tuberculosis; its symptoms, dangers and mortality. It is necessary to educate the masses, to make them "Tuberculosis Minded" and train them to be alert, to seek prompt medical consultation for every ailment that they have, oftentimes simple colds, influenza, etc., which are frequently early manifestations of tuberculosis.

The attending physician must be well equipped with a knowledge of tuberculosis, its early diagnosis through clinical signs and symptoms and by means of the laboratory and the x-ray, to detect the pulmonary lesions in the early stage.

It is my opinion that the instruction given to medical students in all colleges of medicine in the Philippines about tuberculosis is deficient. And I think that this deficiency includes also the colleges of medicine abroad; that is why The American College of Chest Physicians has already recommended that the colleges of medicine give special courses in this disease, thus, giving emphasis in the instruction of tuberculosis to the medical

students, as to its pathology, symptomatology and the different means of diagnosis, laboratory and roentgenology. In our country, the study of tuberculosis taken in the regular courses of medicine in the universities, includes the undergraduate internship of one month in observing and practicing a half-day in the Quezon Institute. This is not sufficient to give the students a full instruction in tuberculosis.

When and how do we suspect that a person is a victim of pulmonary tuberculosis?

Ordinarily, a person with pulmonary tuberculosis shows the following symptoms: persistent hoarseness, obstinate cough or pharyngo-tracheitis or frequent and protracted colds (tuberculous bronchitis). At other times, it may be anorexia, sensation of oppression in the epigastric region, nausea, sensation of fullness in the stomach, constipation or diarrhea, painful defecation or other gastro-intestinal trouble associated with progressive loss of weight. In the female, but very rarely in the male, chloranemia or anemia is observed which is not confirmed by blood examination, as the blood examination may be normal or there may be only a slight diminution of hemoglobin or a slight diminution of the red cells.

The rise of temperature is a very important symptom, as it may develop into a real fever, sometimes with a rise, in the afternoon or in the morning, oscillating from 37° to 39° C. and accompanied occasionally with night sweats, lassitude or general weakness. A surprising disparity between the fever with its symptoms, and the general condition of the patient may still induce us to suspect a tuberculous focus in the body. It is, therefore, necessary to control the temperature for several days in order to determine the nature of the disease.

In the tropics, like the Philippines, it is very important to differentiate the tuberculous fever from the malarial.

On many occasions, I met patients in my clinic who were previously diagnosed as tuberculous patients due to the afternoon fever,

* Quisumbing's Tuberculosis Clinic.

but the blood examinations have shown them to be simple cases of malaria of the subtertian type. At other times, they were diagnosed as malarial, but turned out to be cases of pulmonary tuberculosis.

In view of the aforementioned elucidation in diagnosis, I suggest that the phthisiologist who is practicing in the tropics, be well trained in the blood examination for malaria, so that in case of doubt, he himself can examine the blood of the patient and not send the specimen to any laboratory and leave it in the hands of someone who is not an expert in the blood examination for malaria. And from personal experience, it is not an easy matter to search for malarial parasites in the blood. To be an expert in the blood examination for malaria requires training and experience in drawing the blood with the utmost care, in staining the specimen, the right choice of the materials and the best method of staining. Also, a great amount of experience is needed to be able to distinguish the different types of malarial parasites in the thick films as well as in the thin ones.

It has been observed that in those cases with tuberculous fever, the appetite is sometimes increased. This is not observed in other cases of fevers with different natures.

There are cases in which the presence of a tuberculous lesion is manifested by the appearance of dry pleurisy or pleurisy with effusion and these are usually accompanied by intercostal pain or backache, especially when they are associated with pyrexia, which does not yield to ordinary antipyretics.

A very important clinical symptom is the spitting of blood (hemoptysis) which is recorded in the history of patients in ten per cent of cases, and according to our experience, it may appear without any prodromic symptoms. However, it is not rare for a traumatism on the chest to produce the same symptom.

The clinician who desires to diagnose pulmonary tuberculosis in its early stage, should take, carefully and thoroughly, the history of the patient and check on the causes of the gastro-intestinal troubles like anorexia, symptoms of gastritis, constipation or diarrhea, etc.... loss of weight, the presence of palpitations or tachycardia, the fever, especially if afternoon fever, the diminution or absence of menstrual flow in the young women, etc.

... the presence of reflex pains, intercostal pains, pains in the side between the two axillary lines, pains in the abdominal region which may simulate a hepatic or gastric lesion or appendicitis, or intercostal neuralgia, etc.... pains that may be attributed to a latent cortico-pleuritis, or pains due to irritations of the sympathetic or pneumogastric nerves. General malaise, lack of endurance, loss of strength, night sweats, loss of appetite ...

The clinician must be acquainted with the early signs of pulmonary tuberculosis, the signs of Bacelli, the rachialgia of Neisser's and Petruschky's, of Ringer, of Kuthy, and of Sergent. He must know also the interpretation of every exploratory sign that comes to his attention. For instance, the presence of a rough inspiration in the right side and the diminution of vocal fremitus, when it is widely detected throughout the lung, does not always mean the presence of a pulmonary tuberculosis, although we must always suspect it.

It is very valuable for the clinician to know the presence of a limited focus of softening and surrounding this with an area of condensation, when it is located in the internal part of the supraspinous fossae, or in the upper third of the internal border of the scapula which is the "Zone of Alarm of Stephen-Chauvet and of Sergent."

One of the most brilliant achievements of the x-ray is the discovery of the tuberculous lesion in its early stage, manifested by shadows or signs in the x-ray picture, which in by-gone days could not have been detected by a thorough clinical examination. Clinical examination should not be disregarded in any way, but early diagnosis of pulmonary tuberculosis is almost admitted by the phthisiologists of the world as dependent on the x-ray findings. When the clinical examination is supplemented by an x-ray examination, the early diagnosis of tuberculosis is more reliable.

Brown and Sampson's statistics, compiled in the Trudeau Sanatorium and based on 280 cases of minimal tuberculosis, show the following results:

<i>Positive X-ray—Positive Sputum—Physical Signs</i>		
<i>Evidence</i>		<i>(rales)</i>
99%	35%	27%
<i>History of Hemoptysis—History of Pleural Effusion</i>		
26%		12%

Upon what means can we depend to discover early cases of pulmonary tuberculosis?

There should be a periodical examination of all individuals who are exposed, by contact, to positive tuberculous patients, especially to those cases which are far-advanced and have open cavitary lesions. There should be a systematic investigation or physical examination of groups of school children, teachers, factory laborers and employees, etc....

For the examination of a large group, the tuberculin test and the x-ray are of great value. All individuals that are positive to tuberculin testing should be examined by fluoroscopy and, if necessary, this should be supplemented with radiography.

Summary of the Different Means for Early Diagnosis of Pulmonary Tuberculosis

Doctors James Alexander Miller and Arvid Wallgreen summarize the early diagnosis of pulmonary tuberculosis as follows:

1. **CLINICAL HISTORY**—Family antecedents of tuberculosis should be traced, exposure or contact with a tuberculous patient. These conditions can be detected by tuberculin test or by fluoroscopic examination or x-ray picture of the chest. It is important to investigate a history of hemoptysis or a pleurisy.

2. **SPUTUM EXAMINATION**—The presence of B. Koch in the sputum specimen is a convincing proof of the existence of a tuberculous process. It is necessary in the early stage of the disease to have frequent examinations of the sputum, stomach contents, feces, etc., with the use of different laboratory methods such as the concentration method, cultures and inoculation on susceptible animals, etc.

3. **PHYSICAL EXAMINATION**—The examination should be thoroughly performed, embracing all the areas of election and systematically the provocation of cough as it is necessary to "elicit rales". The areas of election are the following: (a) the apex of each clavicle; (b) the apex of the sub-clavicular fossae; (c) the first intercostal space between

the clavicles, especially the external and internal thirds; (d) the apex of the inferior lobes which are located in the interescapular space immediately below the level of the fourth dorsal vertebra; (e) the interlobar septum along the internal border of the scapula, when the arms are separated with the hands lying on the back of the opposite shoulder; (f) in the children, the 5th and 6th intercostal space outside of the mammary line.

An important fact to know is that there have been many cases of tuberculosis detected by sputum and x-ray examinations, when no physical signs had been elicited by foremost clinicians.

4. **ESTIMATION OF GENERAL CONDITIONS**—These conditions are manifestations of tuberculous toxemia, and involve the slight rise of temperature every afternoon, with or without night sweats, tachycardia, fatigue on slight exertion, progressive loss of weight, loss of strength, gastro-intestinal and nervous troubles.

5. **CORRELATION OF DATA**—It is the conclusion established by the physician after the studies of the clinical history, the results of physical examination, laboratory, etc.

Recommendations

Based on the foregoing experiences are:

1. **Educational Campaign:** Instruct the public about pulmonary tuberculosis: its symptoms, dangers, mortality, curability, etc.
2. **Special instruction in the colleges of medicine on Tuberculosis:** its pathology, clinics, radiology and treatment.
3. **Examination in groups of school children, teachers, factory laborers and employees, etc....** with tuberculin testing or the x-ray.

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Spontaneous Pneumothorax

JOHN ROBERTS PHILLIPS, M.D., and LOUIS F. KNOEPP, M.D.
Houston, Texas Shreveport, Louisiana

The rather frequent occurrence of spontaneous pneumothorax in the practice of the physician, surgeon, and lung specialist merits its renewed consideration from time to time. Ofttimes its introduction to the practitioner is in its distressing bilateral form, when it would tax the resourcefulness and alacrity of the keenest diagnostician and therapist.

Ever since Laennec's treatise on pneumothorax, the probability of a tuberculous etiology has been maintained by many, and even as late as 1915 Cummer postulated that all cases had a latent tuberculous focus which was not readily demonstrable. The fact that other predisposing causes were probable was not well believed until recent years, when definite protocol findings helped to substantiate the so-called idiopathic group and to reveal some of its true pathology.

The present-day concept of spontaneous pneumothorax is not altogether clear. The term "spontaneous" has reference to the collapse produced by some pathologic process as distinguished from that artificially produced. This would seem to include those cases allied to trauma. We have realized the ambiguity of the term and have preferred to designate the pathologic process, the disease entity, and the mode of origin in order to further clarify its meaning.

Spontaneous Pneumothorax:

1. Exogenous
 - Accidental
 - Operative
2. Endogenous
 - (process) Adhesions
 - Blebs
 - Necrosis
 - (disease) Tuberculosis
 - Carcinoma
 - Cystic disease
 - Other inflammations

One can readily see that the majority of cases are the result of endogenous causes. This process requires a force from within the thorax, such as a cough, sneeze, severe mus-

cular pull, or a deep inspiration which shifts the lung suddenly within the thorax. This mechanism requires a pathologic corollary to effect pneumothorax, i.e., a defect in the lung surface. These defects have been repeatedly demonstrated at autopsy and in life through thoracoscopic view, and exist in the form of (1) adhesions, (2) blebs and (3) necrosis. Adhesions may be due to any inflammatory process of the pleura and probably more than half of those seen are tuberculous. In this instance, they usually occur in advanced disease where the pleural reaction has been diffuse. The constant pull of an adhesion upon the lung represents a foundation for pneumothorax. Frequently, the adhesion is directly on a cavity wall and it would not seem difficult to explain empyema following such a pneumothorax. Ofttimes the adhesion produces its tear after a pneumothorax refill, when it is aided by a less negative counterpull of the intrapleural space. When empyema occurs, it frequently requires surgical drainage because of secondary infection from bronchial secretions. Bronchopleural and bronchocutaneous fistulae are frequent sequelae therefrom. Of less frequent importance is cystic disease of the lung due to its comparative rarity. Here the mechanism is usually a rupture due to the pull of an adhesion upon the cyst wall. In malignancy, the adhesions are relatively of the same import as in tuberculosis, but they are as a rule not as prevalent or, if occurring, not as tough. Blebs, on the other hand, may be of two varieties: (1) the scar-tissue type which predominate at the apex and (2) the emphysematous type which occur on the lung border. The former are fluid-containing in their genesis and produce secondary scar and adhesion formation. The latter are air-containing and rupture due to increased intrapulmonary pressure. They are frequently seen in children with bronchopneumonia where there are patches of consolidation or collapse interspersed with areas of emphysema. Congenital cysts represent a different mechanism due to the size of the bullae which usually produce scar tissue.

A less frequent occurrence of pneumothorax from tuberculosis is seen in the spontaneous type due to the rupture of subpleural tubercles following necrosis. Necrosis, on the other hand, is of more importance in causing collapse of the lung in carcinoma where there are diffuse pleural plaques of neoplasm. Necrosis is more widespread here than in tuberculosis, and it may result from either primary or secondary implantation. Needless to say, when carcinomatous pleural plaques are demonstrable, the neoplasm is inoperable.

Exogenous trauma represents the pneumothorax or hemopneumothorax produced by direct or crushing blows to the chest. One sees it frequently from fracture of a rib where a projecting fragment of bone has perforated pleura and lung. Exogenous causes from penetrating wounds do not usually produce tension, as the defect in the thoracic wall allows an outlet for the trapped air. In this category, we include postoperative and surgically induced pneumothorax. We have seen it follow accidental tear of the pleura at the first stage exposure of a two-stage operation for drainage of a pulmonary abscess. Thoracic surgeons are all familiar with the danger period following pneumonectomy or lobectomy when the bronchial sutures may fail to hold. Collapse here may be easily and rapidly fatal. Again the fear of cutting pulmonary tissue in thorascopies has forced the surgeon to abandon many a closed pneumonolysis. It may also complicate the dissection of a mediastinal tumor where the intrapleural approach is not contemplated. Lastly, it may occur on the side opposite the operation either on the operating table or some days later. Here it may be due to the distorted pleural pathology which brings the contralateral thorax into the field of operation, or may be the result of any other non-surgical entity we have mentioned.

When pneumothorax occurs, one or two complications may ensue. The tear in the lung may be of such a nature as to produce a valve-like action, allowing air to enter the pleural cavity, but not letting it escape. This produces tension and the mediastinum is soon shifted to the opposite side. Again, a tear may occur closer to the parietal than visceral pleura and involve the intercostal vessels. Hemorrhage in such cases may be profuse and rapidly fatal as the pleural space is not par-

ticularly helpful in restricting a clot to the injured vessel until blood has filled the whole hemithorax. The positive pressure of the space is no match for the systolic stream, and a tremendous burden is placed on the heart due to the hemothorax. The bleeding is always costal and never pulmonary in origin, for while the pulmonary portion of the adhesion is present, it can be seen to be covered by a layer of fibrin, and at autopsy, one never finds blood in the bronchi or lung parenchyma. Bloody effusions are usually indicative of malignancy or trauma, but as high as 15 per cent signify a tuberculous origin.

Spontaneous pneumothorax is most common between the ages of 20 and 40, but can occur anytime. Males are more susceptible than females, particularly in the traumatic group. As a seeming paradox, it may occur during sleep, but more often results after exertion. Many, including the tuberculous, have no premonitory symptoms beforehand, but once having occurred, recurrence is common. Most cases run a benign course and recede spontaneously in a number of days. Our concern is with those that often become complicated from the start. Usually, there is a sharp, stabbing pain in the shoulder or anterolateral chest. This pain can occur in the upper abdomen or loin and has occasioned difficulties in differential diagnosis from acute abdominal emergencies. In nearly all of the latter cases, ruptured peptic ulcer is suspected, and Rolleston reported nearly performing a laparotomy on one such case being saved only by his moribund condition. With the filling of the pleural cavity by air, dyspnea soon results which is more marked on exertion or by lying on the uninvolved side. There is no more predilection for one side or the other becoming involved. The rapidity of developing symptoms depends largely upon the size of the tear. If effusion occurs, it usually is seen on an average of 12 hours after the onset of pain. Not a few patients have had it occur bilaterally and one writer has seen successive spontaneous collapse on the same side within a few days in separate pleural pockets involving different lobes.

The physical signs are those of air within the thorax with absent or paradoxical motion on the affected side, absent breath sounds, and tympany. If there is an effusion present,

one may denote succussion splash, shifting dullness, and metallic tinkle. The displacement of the heart to the unaffected side is an important diagnostic and therapeutic guide. If hemorrhage is a concomitant, the signs of shock may supervene with a thready pulse, lowered blood pressure and peripheral vascular collapse.

One should not wait to prove his contentions by roentgenographic methods. Treatment, as a rule, is diagnostic and therapeutic aspiration with a 2½ to 3 inch needle thrust into the affected thorax. Air or fluid, or both, may be aspirated until the patient gets relief of dyspnea. One should always watch a change of pulse as a guide to too rapid removal of air or fluid. We advocate taking manometric pressures and palpation of the cardiac apex at all times. Very frequently, one finds it necessary to use continuous air aspiration with the underwater release. If there is blood present, we advocate its prompt removal in one or two sittings and air replacement with the exception of some 400 to 500 c.c. This maintains sufficient intrapleural pressure to discourage hemorrhage. We do not agree, as some contend, that bloody fluid be removed cautiously. We find that its presence produces a thickened pleura, wet atelectasis of the underlying lung and subsequent pneumonitis, and extreme pressure on the mediastinum. This latter mechanism can also be produced by organization of fibrin around mediastinal structures with eventual dilatation of the inferior vena cava. Leaving a large bloody effusion within the thorax also subscribes to empyema by leaving a good culture medium for bacterial growth. When aspirating, if one notes that the blood does not coagulate, it is sterile. Infected blood or tuberculous hemothorax, on the other hand, may show signs of clotting.

We also advocate making up blood loss with repeated transfusions. Some of these patients suffer greatly from anoxemia due to the blood deficit. Oxygen therapy should be available. If bleeding continues despite the neutral or slightly positive pressure, we do not hesitate to introduce a thoracoscope and locate the bleeding point for electrocoagulation. This requires the services of an expert, as it may even prove difficult at autopsy to find the focus of bleeding. If such a search is futile, one should perform open thoracotomy

to ligate the intercostal bleeding. It need not be mentioned that absolute bed rest is a corollary to post-emergency treatment. If there has been a rupture of a tuberculous cavity, frequent aspiration may be mandatory due to the imminent nature of a mixed infection. One should not hesitate then to perform a closed surgical thoracostomy. Cultures will frequently be of aid, but the operator can usually recognize infection by the nature of the sanguinopurulent discharge.

In the course of subsequent therapy, non-expansion is the most probable difficulty encountered. We no longer advocate the instillation of 50 per cent dextrose intrapleurally as suggested by Spengler. If frequent withdrawals of air do not cause re-expansion within a reasonable time, we advocate the use of pure oxygen intrapleurally. Since the oxygen is absorbed by the pleura, there is a tremendous pull exerted upon the space which usually becomes obliterated within a few weeks. The disadvantage of using air lies in the nitrogen fraction which makes up 80 per cent and is not readily absorbed. The usual duration of re-expansion in these cases is 60 days, or it may be prolonged where there has been pleural thickening due to sanguinous effusion or underlying pulmonary pathology.

In obviating recurrences, we caution allowing the patient to be ambulatory between the fourth and eighth week, a time which is most important in keeping a minimal amount of motion when a firm symphysis of the pleurae is being established. It is usually the poorly organized cohesion of the site of previous rupture with surrounding pleura which predisposes to recurrence.

The authors have seen cases exemplifying all types of spontaneous collapse and wish to present a series of cases illustrating the mechanisms of each type.

Case Reports

Case No. 1—(Endogenous, bleb). A white male, aged 46, suddenly experienced a sharp pain in the right anterior chest while walking and immediately became quite dyspneic. He recalled having had an attack of "flu" some three months previous, which did not confine him to bed, but had left him with a moderate weakness and ease of fatigue. Examination by his personal physician revealed a typical spontaneous pneumothorax

on the right which his doctor treated conservatively. Within four weeks he suffered a recurrence of collapse with similar onset while ambulatory. In another two months one of us was called in consultation due to failure of re-expansion; he was still ambulatory. We immediately advised thoracoscopy which revealed a scar-tissue bleb over the right apex. Air was withdrawn at regular intervals, and no other treatment was advised except bed rest. Re-expansion was complete in five weeks and he was kept from working (and walking) for another four weeks. He has remained free of recurrence now for fourteen months.

Case No. 2—(Tuberculosis). A male negro, aged 20, was seen in the emergency room with severe dyspnea, absent motion in the left chest, and obvious distention of the left intercostal spaces. The apex beat was seen and felt in the right parasternal 4th intercostal space, and there was marked epigastric distention, with apparent localization in the left hypochondrium. The physical signs were those of tension pneumothorax and a sterile needle was thrust into the left thorax. He was immediately relieved and breath sounds returned to the lung. It did not seem that he could have lived much longer before we decompressed him. Repeated withdrawals revealed the presence of straw-colored fluid and roentgenograms showed an advanced cavernous pulmonary tuberculosis of the left lung. As his temperature and pulse were rising (104° F., 136), closed surgical drainage was instituted for a mixed empyema. He was improved clinically within a few days, and eventually was subjected to a 11-rib thoracoplasty. The bronchocutaneous sinus closed spontaneously after several months. He has remained as an arrested case for 3½ years.

Case No. 3—(Exogenous trauma). A white woodcutter, aged 34, was received in the emergency room because of a crushing blow to the left chest and hip he received when a tree was felled against him. He was moderately dyspneic and there were classical signs of a left pneumothorax, with the heart displaced approximately 5 cm. to the right. Withdrawals of air relieved him at once and he had to have repeated withdrawals every six hours for 48 hours, then daily for another 48 hours. Roentgenograms revealed fractures

of the 4th, 5th, 6th, and 7th left ribs laterally with displacement of the fragments of the 5th rib. He also had a fracture of the pelvis. Conservative treatment was adopted with adhesive strapping, and repeat roentgenograms revealed a satisfactory self-reduction of the projecting fragment of bone. His convalescence was uneventful and the lung re-expanded within three weeks.

Case No. 4—(Carcinoma). A negro female, aged 32, was seen in consultation because of a spontaneous right hemopneumothorax. This diagnosis was verified by one of us and it was noted also that she had had a radical right mastectomy for carcinoma six months previously. There was no pathological study made at that time for lymph node involvement. Examination revealed no evidence of recurrence by palpation in the scar or axillary region, and roentgenograms were of no additional aid in determining the cause of the collapsed lung. Thoracoscopy was advised and revealed multiple pleural plaques which on biopsy revealed grade iii adenocarcinoma. No therapy was advised save frequent withdrawals of the fluid to save the patient from respiratory embarrassment. She succumbed in three weeks.

Case No. 5—(Post-operative complication). A white male, aged 21, was under treatment for a simultaneous left empyema and abscess of the right middle lobe. The previous history was one of upper respiratory infection which did not respond to treatment, but resulted in empyema within a few days. This was drained surgically and his condition improved, only to relapse after seven weeks with the finding of a right pulmonary abscess. Bronchoscopy and transfusions seemed to improve him clinically, but the abscess grew steadily larger and surgical drainage was decided upon. Under local anesthesia the parietal pleura overlying the abscess was exposed with resection of short segments of two ribs. The pleura was packed with gauze due to inefficient symphysis and the wound closed. Suddenly, after 2 hours, he developed marked dyspnea and unconsciousness from which he never recovered, and died after 3 hours. Continuous withdrawal of air from the right pneumothorax and an oxygen tent failed to save him. We attributed his death to cardiovascular collapse due to his prolonged illness.

Exposure of the operative site revealed a spontaneous tear in the pleura, but no projecting rib stump of import.

Case No. 6 — (Endogenous, adhesion). A white seaman, aged 22, was admitted because of a left hemothorax which had occurred aboard ship 6 days previously. He experienced a sharp pain in the left antero-lateral thorax while moving a hawser and noted moderate dyspnea. He was markedly pale. Roentgenograms revealed an effusion of the left thorax extending up to the 4th rib posteriorly. Withdrawals were advised at once, and 1200 c.c. of unclotted blood were removed and 800 c.c. of air replaced. The second day, 1400 c.c. of thinner bloody fluid were removed and 1200 c.c. of air replaced. Repeat roentgenograms revealed now a pneumothorax with little effusion remaining, but the upper lobe was completely atelectatic. Bronchoscopy was performed and revealed a normal tracheobronchial tree. Thoracoscopy was then performed which revealed the site of the intercostal bleeding spontaneously controlled at the 2nd rib posteriorly from a torn adhesion. The lung surface was entirely normal except for the firm collapsed upper lobe. Re-expansion was encouraged by gradual air withdrawals at intervals of five days, and a repeat roentgenogram in 5 weeks showed the whole lung to be re-expanded with an apparently normal upper lobe and some pleural thickening. No transfusion of blood was necessary. We recapitulated the sequence of events to have been a previous lobar pneumonia which had produced the adhesion some years ago.

Case No. 7 — (Endogenous, tuberculosis). This man, a policeman, aged 29, following a tussle with a bandit, was seized rather suddenly with a feeling of pressure and pain in the left chest. When he was first seen by one of us, he had a high fever and signs of a tension pneumothorax. The heart was markedly displaced to the right and he looked as though he might die at any moment. A needle was thrust into the left chest and an unmeasured amount of air removed. The following morning he was re-aspirated. Two more aspirations controlled the situation, but after six weeks he had a recurrence of collapse with the advent of fluid. He eventually returned to work and has been free of trouble for eighteen months. His past history re-

vealed the nature of the pathologic agent. He had had a cavity in the left lung three years ago, which was treated by pneumothorax. Inasmuch as adhesions were preventing an effective collapse, a partial closed pneumonolysis was performed with closure of the cavity in four months. It was evident that a remaining adhesion had caused his spontaneous collapse with tension. It is noteworthy that this patient escaped a pyopneumothorax which would have resulted had the tear occurred into the cavity-bearing area.

Conclusions

1. Spontaneous pneumothorax may arise from exogenous or endogenous causes. Exogenous causes include those cases referable to trauma; endogenous causes are those seen in disease, as, tuberculosis, malignancy, cystic disease, and non-specific inflammations of the lung.
2. One must be prepared to recognize pneumothorax on sight by its physical signs. Tension pneumothorax may be rapidly fatal.
3. Prompt relief of the pneumothorax by aspiration is indicated. The presence of fluid modifies the rate of aspiration particularly if accompanied by blood.
4. The pathological significance of spontaneous pneumothorax is discussed, with particular reference to its etiologic agent.
5. After-treatment is most important in prevention of recurrence.
6. A series of seven illustrative cases is presented to exemplify certain phases of etiology and treatment.

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Organization News

A Report of Five Years of Progress of The American College of Chest Physicians*

FRANK WALTON BURGE, M.D., F.A.C.P.**
Philadelphia, Pennsylvania

The first Pneumothorax Directory of the organization, at that time known as the Federation of American Sanatoria, was published in 1936. It contained the names of 207 members from 32 states and the District of Columbia. Membership at that time was limited to physicians who were in the private practice of chest diseases. Upon learning of a new organization, known as the Academy of Tuberculosis Physicians, an effort was made at Kansas City, Missouri, in May, 1937, to form an amalgamation of these two organizations. The initiative was taken by the Federation of American Sanatoria, and all proposals for an amalgamation were refused by the officials of the Academy of Tuberculosis Physicians.

In 1937, at Atlantic City, the officers of the Federation of American Sanatoria again approached the officers of the Academy of Tuberculosis Physicians with proposals for an amalgamation of these two organizations, both of which were meeting with the American Medical Association, and whose meeting dates often overlapped, and caused undue embarrassment to many physicians. Again, these proposals were rejected by the officials of the Academy of Tuberculosis Physicians.

Feeling that nothing further could be done to effect an amalgamation, the Federation of American Sanatoria decided to rewrite its Constitution and By-Laws, establish a Board of Regents and a House of Governors and open up the membership to all qualified chest physicians both in this nation and in foreign

countries. That we have kept faith with the high aims and purposes of the College is attested to by our ever increasing membership of qualified chest physicians. The College, today, has the highest qualifications for Fellowship of any of the organizations in this particular specialty.

If those requirements have worked a hardship on any of the many rejected applicants, the Chairman of the Board of Regents wishes to assure such applicants that such rejection was by no means final. Many of these rejected applicants have since complied with the requirements for Fellowship in the College and have re-applied for their Fellowship. Many of them have been admitted as Fellows of the College.

After the change of the name of the organization to the American College of Chest Physicians and after the changes made in the Constitution and By-Laws, the Pneumothorax Directory, published in 1937, listed 452 Fellows from 42 states, the District of Columbia and Hawaii. The College showed an increase of 275 new members in one year. This was the answer given by the chest specialists of the country to those organizations which had failed to keep in step with the times.

During 1938, the increase in new members continued and the Pneumothorax Directory published early in 1939, showed an increase of 73 new Fellows. In this Directory, Fellows were listed from 44 states, the District of Columbia, Hawaii, the Philippine Islands, Puerto Rico and from one foreign country, Mexico.

The 1940 Pneumothorax Directory, which
(Continued to page 250)

* Read at the Sixth Annual Meeting, American College of Chest Physicians, New York City, June 9, 1940.

**Chairman, Board of Regents.

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(Continued from page 248)

has recently been published, shows a further increase in both new members and in the number of foreign countries listed. In addition to those places already mentioned, Fellows have been accepted from Alaska, Canada, Cuba, Ecuador, Australia, China, India, South Africa, Panama Canal Zone and Norway. The names of 577 Fellows of the College have been listed in the 1940 Directory and since the publication of the Directory, 19 new Fellows have been admitted. Our total membership to date is 596. We have no honorary or non-dues paying members, with the exception of those who are on sick leave or have retired from the practice of medicine as provided for in the Constitution and By-Laws. All other members are required to pay dues.

Summarizing this report, the American College of Chest Physicians has, in a period of five years, tripled its membership, established a Directory of men located in this and in foreign lands who are qualified and properly equipped to administer artificial pneumothorax so that patients can be intelligently

guided in their travels about the World; and in the forthcoming (1940) Directory of the American Medical Association, Fellows of the American College of Chest Physicians will receive a special designation after their names, certifying them as Fellows of the American College of Chest Physicians.

No other organization is doing, nor is capable of doing the work which the College has undertaken to do. The reports of the Chairmen of the committees on diversified activities, which will soon follow this report, will be ample proof of the vast amount of work being accomplished by the College. The College is today the strongest organization of chest physicians associated with and meeting with the American Medical Association. There is no longer any need to amalgamate with any other organization. The College is ready to accept, on a basis of equality, all qualified applicants for Fellowship. We refuse to lower our standards for any amalgamation.

We have the right to note with pride that the **SUN NEVER SETS ON THE COLLEGE OF CHEST PHYSICIANS.**

CHANGES OF ADDRESS

Dr. Irving L. Applebaum, Fellow of the College, announces the removal of his offices from 152 Clinton Avenue, Newark, New Jersey, to the Medical Tower Building, 31 Lincoln Park, of the same city.

Dr. Henry L. Dorfmann, Fellow of the College, announces the removal of his offices from 219 East 12th Street, New York City, to 20 Park Avenue, New York City.

Dr. Harry P. Thomas, Fellow of the College, formerly of San Antonio, Texas, is now on the staff of the Rusk State Hospital for the Insane at Rusk, Texas. Dr. Thomas will direct tuberculosis work at the hospital. It is the first time that a physician trained in tuberculosis work has been employed to care for the tuberculous insane in Texas. Three hundred patients are already isolated and all of the remaining inmates are being x-rayed.

ADDRESSES BY FELLOWS

Among the speakers at the Second Annual Conference of Negro Tuberculosis Workers, held at Howard University, May 27, 28, 1940, was Dr. George Ornstein, New York City, Governor of the College for the State of New York.

Dr. Julius Lane Wilson, New Orleans, Louisiana, Regent of the College for District Number 8, was one of the lecturers for the six week post-

graduate course in internal medicine given in Montgomery, Alabama, starting April 26th. The same lectures will be given in Dothan, Troy, Eufaula and Greenville.

Dr. Albert Worth Hobby, Atlanta, Georgia, a Fellow of the College, presented a paper entitled, *Air Embolism Following Pneumothorax*, before the Fulton County Medical Society on April 4, 1940.

Dr. Chevalier L. Jackson, Philadelphia, Pennsylvania, a Fellow of the College, was one of the speakers on the program of the one hundred and seventy-fourth annual meeting of the Medical Society of New Jersey, held June 3-6, 1940.

Among the speakers at the Annual Meeting of the American Association for Thoracic Surgery, held in Cleveland, Ohio, June 6-8, 1940, were the following Fellows of the College: Dr. Edward P. Eglee, New York City, Regent for the College of District Number 2; Dr. Jacob J. Singer, Los Angeles, California; and Dr. Chevalier L. Jackson, Philadelphia, Pennsylvania.

Among the speakers on a program on *Clinical Aspects of Pulmonary Disease*, presented before the Essex County Medical Society in Newark, New Jersey, was Dr. George G. Ornstein, New York City, Governor of the College for the State of New York.

(Continued to page 252)

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(Continued from page 250)

Dr. John S. Packard, of Philadelphia, Pennsylvania, a Fellow of the College, addressed the Lycoming County Medical Society on May 10, 1940, at Williamsport, Pennsylvania. The subject of his address was *Diagnosis and Treatment of Tuberculous Tracheobronchitis*.

Dr. William C. Blake, Tampa, Florida, Fellow of the College, acted as Chairman of a regional meeting of the American College of Physicians, held at Tampa on April 29, 1940. Dr. Charles H. Cocke, Asheville, North Carolina, Fellow of the College, spoke on the objectives of the American College of Physicians. Dr. Louie Limbaugh, Jacksonville, Florida, a Fellow of the College, was selected as Chairman of the 1941 regional meeting, which will be held in Jacksonville.

Dr. Walter E. Vest, Huntington, West Virginia, Governor of the College for that State, was the guest speaker at the April 25th meeting of the Mercer County Medical Society. Dr. Vest spoke on *Medical Obligations*.

The twenty-third Annual Meeting of the American Broncho - Esophagological Association was held at New York City, June 5, 1940. Dr. Paul H. Holinger, Chicago, Illinois, Secretary-Treasurer of the College, is the Secretary of the Association; and Dr. Chevalier L. Jackson, Philadelphia, Pennsylvania, a Fellow of the College, was one of the speakers.

TEST TOWN FOR TUBERCULOSIS

Elmsford, New York, may soon be the guinea pig for what is claimed to be America's first community-wide tuberculosis testing. Chief obstacle in the way of experiment is obtaining the consent of the town's 3,200 inhabitants, whose tuberculosis mortality rate of 70 per 100,000 is far above the national average. To determine the patients' attitude, a house-to-house canvass is now being conducted. A citizens' committee has already approved the venture, and the American Legion has donated its hall for examinations. Lone objector so far on record is Dr. A. R. Goodman, who holds that the project constitutes "regimentation."—*Medical Economics*.

ROLL CALL

Annual Meeting of the Board of Regents and House of Governors of The American College of Chest Physicians
Biltmore Hotel, New York City, June 8, 1940

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Dr. C. Howard Marcy, Pittsburgh, Pa., Regent District No. 3.
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* Districts Nos. 7, 8, 9, 11, and 12 not represented.

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Massachusetts, Dr. Frank H. Washburn, Holden.
(Continued to page 254)

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E. W. HAYES, M.D., Medical Director

(Continued from page 252)

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 Missouri, Dr. H. I. Spector, St. Louis.
 New Jersey, Dr. James M. Fine (Alternate), Newark.
 New York, Dr. Harry Golembe (Alternate), Liberty.
 Ohio, Dr. Joseph C. Placak, Cleveland.
 Oregon, Dr. James M. Odell (Alternate), The Dalles.
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 Rhode Island, Dr. U. E. Zambarano, Wallum Lake.
 Texas, Dr. E. Mendenhall (Alternate), Dallas.
 Virginia, Dr. Dean B. Cole, Richmond.
 Washington, Dr. John E. Nelson (Alternate), Seattle.
 Wisconsin, Dr. Andrew Banyai, Wawatosa.
 Cuba, Dr. Antonio Navarrete, Havana.

COMMITTEE MEMBERS

Dr. Harry Warren, San Francisco, California; Sanatorium Committee.
 Dr. Louis Mark, Columbus, Ohio; Sanatorium Committee.
 Dr. Alexius M. Forster, Colorado Springs, Colo.; Sanatorium Committee.

CONGRATULATIONS—(Continued from page 230).

Directors of Surgery, Drs. Henry W. Louria and Daniel A. Mulvihill; as *Visiting Surgeons*, Drs. Cranston W. Holman and Herbert C. Maier; and as *Visiting Physician*, Dr. Abraham Braunstein. To these men, certainly an able group, we offer our best wishes on their

Dr. George Ornstein, New York, N. Y.; Chairman, Scientific Program Committee.

Dr. Edgar Mayer, New York, N. Y.; Chairman, General Arrangements Committee.

Dr. Jas. S. Edlin, New York, N. Y.; Chairman, Entertainment Committee.

Dr. David Ulmar, New York, N. Y.; Chairman, Surgical Section.

Dr. Foster Murray, Brooklyn, N. Y.; Chairman, Medical Section.

Dr. Walter C. Reineking, Madison, Wisconsin; Governor-elect, Wisconsin.

Dr. A. J. Cohen, Philadelphia, Pa.; Medical School Education Committee.

Dr. Ferdinand Chenik, Detroit, Michigan; Sanatorium Committee.

Dr. B. L. Chipley, Paterson, N. J.; Chairman, New Jersey Organization Committee.

GUEST OF HONOR

Dr. Richard Overholt, Brookline, Massachusetts.

Executive Secy.: Murray Kornfeld, El Paso, Tex.

Total Attendance — 56.

PRESIDENTS ADDRESS—(Continued from page 233)

pass on the qualifications of Fellows who list themselves, in the Pneumothorax Directory, as specializing in chest surgery. As the situation now stands, a Fellow who wishes to have himself so classified, has merely to designate such a wish on his application, and automatically he becomes listed as one specializing in chest surgery. In glancing through the Directory, I observed numerous instances where such a classification was not justified, as I personally knew there had been inadequate training. In one instance, the physician had scarcely completed a three months course on chest surgery. I think this is exceedingly important to those who use the Directory for referring cases, as they should have the assurance, when a case is referred to a surgeon listed as specializing in chest surgery, that the surgeon is qualified to do this work.

new appointments, and we are sure that under their leadership the Triboro Hospital will take its place among those institutions now working so hard to eradicate tuberculosis.

C. M. H.

If you feel the affairs of the College have been conducted successfully during the past year, credit is due not so much to your presiding officer as to those who have been associated with him in office and active on the various committees. Without their helpful guidance, I should have accomplished little.

I am singularly pleased with the efforts made to attend the meeting by foreign Fellows, living in Cuba and Canada, and others living at remote points. I sympathize with the loneliness of the traveler and realize the pull of work left behind. I trust, however, that when you return home you will have accumulated a considerable balance of renewed stimulus to face the daily tasks, and perhaps even assembled a few new ideas along the way.